



## FOREWORD

Cotton has long been important in the Mexican economy. Mexico exported one-third of its cotton crop or an average of 105,000 bales annually during 1934-38. An impressive expansion in Mexican cotton production came shortly after World War II, when cotton became so important that its share of Mexico's agricultural export value grew from 5 percent in 1940 to 50 percent in 1950. This growth put Mexico in fifth place among world cotton exporters, an approximate position it maintained until 1970 when production started to decline. Following a brief boom in 1974, production fell in 1975 to a level that was only slightly more than enough to cover domestic needs.

This study analyzes the cotton situation and prospects in Mexico. Some of the reasons for the recent decline in Mexican cotton production are presented, as well as an evaluation of future production levels.

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# The Mexican Cotton Industry

## Developments and Prospects

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### SUMMARY

Mexico, which has ranked among the world's top five cotton exporters during most of the past 25 years, produced only a little more than enough cotton to satisfy domestic needs in 1975. (Table 1)

The outlook is for larger plantings in 1976, but production is still likely to be only about half the 1960-69 average. This drastic change is the result of a shift from cotton to food crops. The Government is concerned with the increasing food needs of the population and is providing favorable support prices for food crops but none for cotton.

TABLE 1.—MEXICO: COTTON AREA, YIELD, SUPPLY, AND DISTRIBUTION, 1945-75

*[In thousands of 480 lb net bales]*

Year beginning August 1	Area (1,000 acres)	Yield (lbs. per acre)	Begin- ning stocks	Pro- duction	Imports	Total supply & utili- zation	Con- sump- tion	Unac- counted for	Exports	Ending stocks
1945 .....	904	225	281	423	1	705	189	—	263	253
1946 .....	843	262	253	460	2	715	232	—	204	279
1947 .....	927	250	279	484	1	764	268	—	376	120
1948 .....	1,050	261	120	571	2	693	284	—	239	170
1949 .....	1,446	311	170	937	2	1,109	290	—	655	164
1950 .....	1,880	293	164	1,151	2	1,317	310	—	742	265
1951 .....	2,183	279	265	1,273	2	1,540	305	—	972	263
1952 .....	1,937	309	263	1,250	1	1,514	300	—	992	222
1953 .....	1,860	312	222	1,210	1	1,433	310	—	951	172
1954 .....	1,820	469	172	1,780	1	1,953	400	—	1,253	300
1955 .....	2,700	400	300	2,250	—	2,550	435	3	2,027	85
1956 .....	2,095	410	85	1,790	—	1,875	460	5	1,310	100
1957 .....	2,247	445	100	2,085	—	2,185	460	8	1,417	300
1958 .....	2,510	448	300	2,345	5	2,650	485	6	1,809	350
1959 .....	1,798	451	350	1,690	2	2,042	485	3	1,304	250
1960 .....	2,234	451	250	2,100	1	2,351	515	1	1,610	225
1961 .....	2,020	474	225	1,995	1	2,221	510	4	1,482	225
1962 .....	2,064	563	225	2,425	1	2,651	510	4	1,897	240
1963 .....	1,964	515	240	2,109	1	2,350	575	6	1,426	343
1964 .....	1,935	595	343	2,400	2	2,745	600	11	1,616	518
1965 .....	1,960	642	518	2,625	2	3,145	625	15	2,127	378
1966 .....	1,732	623	378	2,250	2	2,630	700	18	1,392	520
1967 .....	1,702	564	520	2,000	2	2,522	700	8	1,239	575
1968 .....	1,780	660	575	2,450	2	3,027	700	12	1,631	684
1969 .....	1,340	626	684	1,750	3	2,437	675	11	1,227	524
1970 .....	1,043	667	524	1,450	6	1,980	670	15	760	535
1971 .....	1,140	720	535	1,710	2	2,247	710	15	909	613
1972 .....	1,236	695	613	1,790	1	2,404	790	10	863	741
1973 .....	1,065	662	741	1,470	1	2,212	790	5	741	676
1974 .....	1,445	740	676	2,230	—	2,906	725	—	890	1,291
1975 .....	570	745	1,291	885	—	2,176	750	—	600	826

FAS Cotton Division, FCA November 20, 1975

During the past 3 years Mexico has imported 15 percent of its corn requirements, 25 percent of the wheat, and 45 percent of the soybeans. In 1975 the Government provided minimum prices of \$3.87 for corn (raised from \$3.56 on September 24, 1975), \$3.81 for wheat, and \$7.62 per bushel for soybeans. (Table 2) Such favorable prices have given a competitive advantage to these crops. In addition, many farmers prefer to produce grains that can be harvested mechanically rather than to administer the large work forces needed to pick cotton.

Mexican cotton farmers have shown, however, that they are very responsive to price-cost relationships, and in the future, if the profitability of cotton relative to other crops should improve sufficiently, Mexico could again become a large exporter of raw cotton. Two factors that might cause the Government to change the price relationship are the effect of declining cotton production on unemployment and

the concern of the domestic mills that small crops will not supply enough of the qualities they need.

Even without changing the price relationship, the Government, if it becomes sufficiently concerned about cotton output, can influence production through allocation of irrigation water and credit. These are very powerful tools for influencing what farmers plant, since virtually all cotton in Mexico is irrigated and both irrigation water and credit are provided at what in effect are, subsidized prices.

However, so long as the quantity and grades needed by the domestic mills are supplied (currently about 750,000 bales per year), many feel that Government policy probably will continue to allow farmers to produce what they wish within the framework of minimum prices established for food crops and the market price for cotton as determined by supply and demand.

TABLE 2.—MEXICO AND UNITED STATES: PRICE SUPPORTS FOR SOME 1975 FOOD AND FEED CROPS

Commodity	Mexico			United States	
	Pesos per metric ton	Equivalent in		Dollars per designated unit	
		Dollars <sup>1</sup> per metric ton	Dollars <sup>1</sup> per designated unit	Target price <sup>2</sup>	Loan level <sup>3</sup>
Soybeans . . . . .	3,500	280	7.62/bu.	None	None
Wheat . . . . .	1,750	140	3.81/bu.	2.05/bu.	1.37/bu.
Corn . . . . .	<sup>4</sup> 1,750	140	3.56/bu.	1.38/bu.	1.10/bu.
Safflower . . . . .	<sup>4</sup> 3,500	280	.127/lb.	None	None
Sorghum . . . . .	1,650	132	3.35/bu.	1.31/bu.	1.05/bu.
Edible beans . . . . .	<sup>4</sup> 6,000	480	.22/lb.	None	None

<sup>1</sup> Calculated at the rate of 12.5 pesos per U.S. dollar.

<sup>2</sup> Guaranteed on production from allotment acreage.

<sup>3</sup> Guaranteed on all production.

<sup>4</sup> Effective September 24, 1975:

Corn—1,900 pesos (\$3.87/bu.)

Safflower—3,200 pesos.

Edible beans—4,500 or 5,000 pesos, depending on type.

## INTRODUCTION

Mexico has 58 million people living on 762,000 square miles, giving a population density of 66 persons per square mile, compared with 57 in the United States. However, a slightly higher percentage of Mexico's land is considered agricultural than that of the United States, which gives Mexico 5 acres of agricultural land per person, the same as in the United States. Moreover, most of Mexico has the advantage of a longer growing season than that of the United States.

Consumption of agricultural commodities is growing at a faster rate than production, however, so that agricultural imports are trending upward at a faster rate than agricultural exports.

Only 12 percent of the country receives adequate rainfall in all seasons, while about half is deficient in

moisture throughout the year. A large part of total agricultural output is produced on about 4 million hectares, or nearly 10 million acres, of irrigated land.<sup>1</sup> Virtually all of Mexico's cotton production is on this irrigated land. The Secretary of Hydraulic Resources announced in June 1975 that the objectives of bringing an additional million hectares, or about 2.5 million acres under irrigation by the end of 1976 will be reached, and that another 2 million hectares, or approaching 5 million acres should be irrigated within the following 6 years.

Mexico's location with respect to major cotton import markets in Europe and the Far East is fairly comparable to that of the United States, and the types of cotton produced in Mexico are similar to most of those produced in the United States.

## PRODUCERS

Over 70 percent of Mexico's cotton is produced by ejidatario farmers who have a lifetime right to farm about 10 to 20 hectares (25 to 50 acres) of Government-owned communal land. They also have the right to pass their holdings on to a family member, with the Government continuing to retain title. The remaining 30 percent of the cotton is produced by small landowners or by colono farmers, who own land, wells for irrigation, and machinery in common and produce and market in common.

Small landowners, under current laws, may not own more than 100 hectares (approximately 250 acres) of irrigated land, but usually own much less. However, some have put together larger operations by renting or family ownership.

The bulk of Mexico's cotton still is picked by hand, which means that larger farmers usually must hire workers from outside the family at substantial expense, although they are able to obtain Government financing for planting and picking. These farmers contend that laborers who are willing to do this type of work are becoming scarce, demanding ever higher rates per kilogram of cotton picked, and including more trash with the cotton in an effort to

harvest a greater weight. Also, this group of farmers must depend on the vagaries of world market prices in the absence of a support price for cotton.

On the other hand, if farmers with more acreage turn to grain, they have a crop that can be easily mechanized on larger farms, that requires smaller inputs of expensive fertilizer and pesticides, and that has the benefit of sharply increased Government support prices. As a result, it appears that the larger landowner farmers will continue to produce grain crops.

The situation is different, however, for the small ejidatario farmers and colonos, who utilize mostly family labor for picking. They are able to use the 1,250 pesos per bale (\$40 per acre or \$25 per bale), which the Government or private firms provide to finance picking costs as an important part of the family income. The larger farmers, however, must spend this income to pay outside labor. The ejidatario and colono farmers do a good job of picking clean cotton and can demand a higher price. They, too, benefit from Government financing and must operate without a support price. It appears probable, however, that the small farmers will stay with cotton.

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<sup>1</sup>One hectare equals 2.471 acres.

## MAJOR PRODUCTION AREAS

The largest producing areas are now Laguna in the Torreon area in North Central Mexico; the West Coast in the States of Sonora and Sinaloa; and Mexicali, which is the Mexican part of the same valley that, in the United States, is called the Imperial Valley of California. These areas produced 72 percent of the Mexican cotton crop in 1974 and 70 percent in 1975. All three have maintained a relatively important role in Mexico's cotton production since the big expan-

sion of the late 1940's and early 1950's. While other areas such as Altamira and Matamoros contributed substantially to cotton output in the past, little, or no cotton comes from these areas today. (Table 3)

The sharp drop in area planted to cotton for all of Mexico from 1974 to 1975, as well as virtual termination of production in Altamira and Matamoros, indicates that Mexican farmers are not wedded to cotton and will shift rather rapidly to

TABLE 3.—MEXICO: COTTON ACREAGE, LINT YIELDS, AND PRODUCTION BY AREAS, SEASONS BEGINNING AUGUST 1, 1966-76

Area	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
<i>1,000 acres</i>											
Acreage:											
West Coast .....	457	479	581	502	421	487	489	317	450	136	115
Mexicali .....	329	309	222	193	145	136	124	101	229	106	99
Altamira .....	383	296	334	99	17	1	( <sup>1</sup> )	0	0	0	0
Laguna .....	195	208	211	235	210	218	235	223	250	161	173
Matamoros .....	54	22	45	19	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	0	0
Apatzingan .....	67	86	86	74	49	67	82	62	74	37	49
Tapachula .....	54	74	74	59	62	79	99	106	116	64	64
Delicias .....	52	61	59	24	17	21	57	62	86	10	12
Juarez .....	59	69	62	42	40	45	40	45	54	27	37
La Paz .....	32	35	37	49	52	49	49	55	67	( <sup>1</sup> )	( <sup>1</sup> )
Other .....	50	63	69	44	30	38	61	94	119	32	61
Total .....	1,732	1,702	1,780	1,340	1,043	1,140	1,236	1,065	1,445	573	610
<i>Pounds per acre</i>											
Yield:											
West Coast .....	841	747	782	725	759	687	711	807	849	734	—
Mexicali .....	805	545	720	510	530	448	712	765	713	679	—
Altamira .....	212	138	400	82	395	480	n.a.	n.a.	n.a.	n.a.	—
Laguna .....	751	759	849	756	677	958	737	646	943	859	—
Matamoros .....	169	371	363	253	n.a.	n.a.	n.a.	( <sup>1</sup> )	( <sup>1</sup> )	0	—
Apatzingan .....	795	837	882	752	784	838	650	658	662	752	—
Tapachula .....	524	448	525	521	488	589	553	530	550	630	—
Delicias .....	591	685	529	660	565	1,189	657	465	675	576	—
Juarez .....	537	431	449	469	396	608	624	405	542	462	—
La Paz .....	915	1,029	1,245	1,009	905	1,107	1,117	995	967	—	—
Other .....	413	229	195	360	320	177	409	317	367	105	—
Total .....	624	564	661	628	667	720	695	663	754	741	—
<i>1,000 bales of 480 lbs. net</i>											
Production:											
West Coast .....	801	745	946	758	666	697	724	533	796	208	—
Mexicali .....	552	351	333	205	160	127	184	161	340	150	—
Altamira .....	169	85	278	17	14	1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	—
Laguna .....	305	329	373	370	296	435	361	300	491	288	—
Matamoros .....	19	17	34	10	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	0	—
Apatzingan .....	111	150	158	116	80	117	111	85	102	58	—
Tapachula .....	59	69	81	64	63	97	114	117	133	84	—
Delicias .....	64	87	65	33	20	52	78	60	121	12	—
Juarez .....	66	62	58	41	33	57	52	38	61	26	—
La Paz .....	61	75	96	103	98	113	114	114	135	52	—
Other .....	43	30	28	33	20	14	52	62	91	7	—
Total .....	2,250	2,000	2,450	1,750	1,450	1,710	1,790	1,470	2,270	885	—

<sup>1</sup> Included with others.

Source: Official and trade Statistics, reports of U.S. agricultural attaches, and other information.

more profitable alternative crops when cotton prices are low.

**Laguna Region.** Agriculture in this area got a big boost with the building of a dam in 1941. This area gets virtually no rainfall except in the mountains and the dam makes it possible to store that rainfall and irrigate about 85,000 hectares, or 210,000 acres, 90 percent of which is ejido land and the other 10 percent in private hands. An additional 36,000 hectares or more than 89,000 acres, are irrigated by wells, of which 45 percent is ejido and 55 percent private. No economically feasible way has been found to increase the amount of water available for irrigation in this area.

Cotton is the leading crop, accounting for 92 percent of the value of all agricultural production in 1973/74. Other crops produced in order of value are alfalfa, safflower, wheat, and tomatoes.

Cotton was grown on 101,000 hectares in 1974, of which 79,000 hectares (79 percent) were farmed by ejidatario farmers and 22,000 (21 percent) by private owners. Reservoir water was used to irrigate 73,000 hectares (73 percent) and wells supplied water for 27,000 hectares (27 percent). (Table 4) The cost of water for irrigating cotton from the reservoir in 1975

was \$24 per hectare (\$10 per acre), while the cost of irrigating by well was \$160 per hectare (\$65 per acre). (Table 5) Yields in 1974 averaged 4.8 bales per hectare or 2.0 bales per acre. Yields were slightly higher for private farmers and for reservoir-irrigated land. Privately owned land sold for about \$1,000 per acre in 1975.

According to the Government's agricultural insurance agency, the cost of producing cotton in the Laguna area in 1975 was only slightly above the return, leaving a profit of only 2,725 pesos per hectare or \$88 per acre. (Table 5) Cost, however, includes the cost of picking, which is a real cost for the larger private farmers, but is part of family income for the smaller ejidatario farmers. The cost of picking was calculated at 0.5 pesos (4 U.S. cents) per kilogram, or 1.8 cents per pound of seed cotton, or 5 U.S. cents per pound of lint. Wage rates are about US\$8 per 8-hour day, in industrial jobs including various benefits, and \$4 per day for field workers. But cotton workers who are paid on a piecework basis may earn around \$8 per day.

Cotton area dropped by one-third from 1974 to 1975 after 8 years of stability at 210,000 to 250,000 acres. (Table 3)

TABLE 4.—LAGUNA, MEXICO: AREA, PRODUCTION, AND YIELD FOR COTTON PRODUCED UNDER WELL AND RESERVOIR IRRIGATION, 1974, BY TYPE OF FARMER

Item	Wells		Reservoir		Total		Percent
<i>Area:</i>	<i>Hectares</i>	<i>Acres</i>	<i>Hectares</i>	<i>Acres</i>	<i>Hectares</i>	<i>Acres</i>	
Ejidatario .....	12,053	29,783	67,164	165,962	79,217	195,745	79
Private .....	15,419	38,100	6,194	15,306	21,613	53,406	21
Total .....	27,472	67,883	73,358	181,268	100,830	249,151	100
<i>Production:</i>	<i>Production, 480 pound bales</i>						
Ejidatario .....	52,511		325,630		378,141		78
Private .....	74,781		31,065		105,846		22
Total .....	127,292		356,695		485,987		100
<i>Yield:</i>	<i>Bales per hectare</i>	<i>Bales per acre</i>	<i>Bales per hectare</i>	<i>Bales per acre</i>	<i>Bales per hectare</i>	<i>Bales per acre</i>	
Ejidatario .....	4.36	1.76	4.85	1.96	4.77	1.93	—
Private .....	4.85	1.96	5.02	2.03	4.90	1.98	—
	<i>Percent of cotton area irrigated by wells and reservoir</i>						
Ejidatario .....	15		85		100		—
Private .....	71		29		100		—

Source: Patronato para la Investigacion, Fomento, y Sanidad Vegetal de La Comarca Lagunera, Estadística de La Produccion Agropecuaria y Su Valor. Ciclos 1973-74 y 1974-75.



TABLE 5.—LAGUNA: ESTIMATED COSTS AND RETURNS FROM COTTON IN 1975 FOR EJIDO FARMERS USING RESERVOIR IRRIGATION WITH A YIELD OF 4 BALES PER HECTARE<sup>1</sup>

Item	Pesos per hectare	Dollar equivalent <sup>2</sup>	
		Per acre	Per bale
Permit to plant . . . . .	10	0.32	0.20
Water . . . . .	300	9.72	6.00
Deep plowing . . . . .	270	8.75	5.41
Discing . . . . .	80	2.59	1.60
Floating (land planeing). . . . .	80	2.59	1.60
Preparing for water (leveling) . . . . .	60	1.94	1.20
Furrowing . . . . .	85	2.75	1.70
Bordering . . . . .	60	1.94	1.20
Connecting borders . . . . .	40	1.30	.80
Preplant irrigation . . . . .	60	1.94	1.20
Double discing or harrowing . . . . .	140	4.54	2.80
Seed . . . . .	260	8.42	5.20
Fertilizer . . . . .	450	14.58	9.01
Apply fertilizer and plant. . . . .	120	3.89	2.40
Replanting . . . . .	30	.97	.60
Thinning . . . . .	160	5.18	3.20
Fertilizer . . . . .	275	8.91	5.50
Cultivate and apply fertilizer . . . . .	200	6.48	4.00
Six weedings . . . . .	900	29.16	18.01
Four subsequent weedings . . . . .	600	19.44	12.01
Raising borders . . . . .	160	5.18	3.20
Auxiliary irrigation (after first in case of replanting) . . . . .	240	7.78	4.81
Canal cleaning . . . . .	120	3.89	2.40
Insecticide and application . . . . .	2,400	77.76	48.04
Fungicide and application (for root rot) . . . . .	375	12.15	7.51
Entomology services . . . . .	60	1.94	1.20
Picking . . . . .	1,250	40.50	25.02
Watchman and weigher . . . . .	430	13.93	8.61
Delivery to gin . . . . .	55	1.78	1.10
Rotary chopper . . . . .	130	4.21	2.60
Plowing (reversible) . . . . .	270	8.75	5.41
Ginning . . . . .	1,500	48.60	30.02
Taxes (4 percent) . . . . .	200	6.48	4.00
Interest . . . . .	480	15.55	9.61
<b>Total costs . . . . .</b>	<b>11,850</b>	<b>383.91</b>	<b>237.16</b>
Value of lint . . . . .	12,080	391.40	241.79
Value of seed <sup>3</sup> . . . . .	2,500	81.00	50.04
<b>Total revenue . . . . .</b>	<b>14,580</b>	<b>472.40</b>	<b>291.82</b>
<b>Total revenue minus total costs . . . . .</b>	<b>2,725</b>	<b>88.49</b>	<b>54.66</b>
<b>Cost of producing lint<sup>4</sup></b>	<b>—</b>	<b>In U.S. cents per pound</b>	<b>39</b>
		39	39

<sup>1</sup> Based on yield of 4 bales per hectare or 1.6 bales per acre and price to producer of 640 pesos per net quintal (46.2 kilograms) or 50 U.S. cents per pound. These data are based on a programmed area of 45,000 hectares for Ejidatario farmers and 3,000 for small landowner farmers.

The cost for farmers who irrigate with wells would be 13,550 pesos per hectare or 46 cents per pound. The higher cost is the result of higher cost for water. Irrigation water from wells costs 2,000 pesos per hectare (\$65 per acre) compared with 300 pesos per hectare (\$10 per acre) for reservoir water.

These cost estimates do not include a return to land or management.

<sup>2</sup> Converted at 12.5 pesos per dollar.

<sup>3</sup> Based on price of seed to farmer of 2,500 pesos (US\$200) per metric ton or 9 U.S. cents per pound. At 350 kilograms or 772 pounds of seed produced for each bale of lint cotton, with a yield of 4 bales per hectare, this gives a value of seed of 3,500 pesos or US\$280 per hectare or \$113 per acre.

<sup>4</sup> Cost of lint equals 11,850 minus 2,500 (assuming that the cost of producing seed equals the value of producing seed) equals 9,350 pesos per 4 bales equals \$748 per 1,920 pounds or 39 U.S. cents per pound.

Source: Aseguradora Nacional Agrícola Y Ganadera, S. A. (ANAGSA).

**West Coast.** Cotton area in the States of Sonora and Sinaloa dropped by two-thirds from 1974 to 1975, reducing this region from Mexico's first to second cotton producing region. Again the area planted to cotton had been fairly stable at around 420,000 to 580,000 acres during the past several years except in 1973 when it dropped to 317,000. In 1975 the area planted to cotton dropped to only 136,000 acres. (Table 3)

From 30 to 50 percent of the cotton in this area is produced by private landowners who may legally own up to 100 hectares of irrigated land. These farmers complain about the difficulty of getting pickers and the problems of administering, and the high cost of paying, the large work forces needed to pick cotton. Thus, many farmers find it more profitable to grow grain crops, which are mechanized and for which the Government pays very lucrative support prices.

Soybeans, safflower, sorghum, and wheat are the biggest competitors of cotton in this region. Other important crops are dry beans, rice, sugar, and horticultural crops. Water availability is especially important in this area. In years when the water supply is good, many farmers will double crop, but if the water is sufficient for only one crop, most farmers will plant cotton which, because of its long growing season, cannot be double cropped.

Crops are grown on what is basically desert land irrigated by water from various reservoirs. Irrigated land is worth about \$800 to \$1,200 per acre, a relatively low price by world standards considering its productivity. Uncertainty concerning tenure rights keeps the price from going higher.

A plan to expand the area under cultivation in Sonora is being implemented which will increase the amount of water available for irrigation by bringing unused river water from the south through an elaborate system of canals and rivers.

**Mexicali Region.** Mexicali like Torreon, has a definite limitation on the amount of water available for irrigation. Rainfall is a rarity and about 80 percent of the water for irrigation comes from the Colorado River, but some also comes from wells. Water is so limited that 20 hectares is the maximum amount of irrigated land that any farmer may cultivate. There are about 200,000 hectares of water rights in the Mexicali area. The average size farm for both ejidatario and private farmers is about 17 or 18 hectares. About 70 percent of the land is cultivated by ejido and 30 percent by private farmers.

Wheat and cotton are the principal crops grown in the Mexicali area though there is some barley, safflower, and sesame. Double cropping of some crops would be very easy if enough water were available.

**Other Regions.** Cotton is grown in a number of regions (Table 3) of less importance, but these areas were not studied separately.

In 1966, Altamira, on the Gulf of Mexico in the Tampico area had the second largest area in cotton in Mexico. From 1960-65 production in Altamira skyrocketed—from no commercial crop to one of 490,000 bales. Despite relatively low yields, profits were fantastically high since the area required no irrigation or fertilization and costs of land and of insect control were low. Natural risks were great, however, in terms of drought, untimely rains, and severe storm damage. Also, insect control became increasingly expensive, and soil fertility decreased.

A major pest, the tobacco budworm, developed high resistance to organic insecticides and the extreme difficulty of controlling this insect was a major factor in the decision to reduce the area planted to cotton. Because of the hazardous growing conditions, the Mexican Government severely limited the area covered by crop insurance, and by 1971 Altamira was producing virtually no cotton.

Matamoros, across the border from Brownsville, Texas, was one of the oldest cotton areas in Mexico, and until 1964, was the largest in area. Although rainfall was usually inadequate or untimely, large areas of unirrigated cotton were planted each year. Water was also grossly inadequate for the irrigated acreage. Over the years, soil salinity increased, insect control became more difficult, production costs rose, and yields fell. Matamoros had 30,000 acres in cotton in 1974, but none in 1975.

Tapachula, at the southern tip, and Delicias, in north central Mexico are regions in which both area and production trended generally upward from 1966 to 1974. Both area and production, however, declined in 1975.

One of the interesting facets of Mexican cotton production is the willingness of farmers to switch in and out of cotton. In the case of Altamira and Matamoros, the switch came as a result of weather and insect problems. In the other areas, however, the swings in and out of cotton have been primarily the result of the response of Mexican farmers to price movements.

**U.S. Varieties Planted.** Mexico has generally depended on the United States for its cotton varieties with local research to determine which are best adaptable. Virtually all Mexican cotton is Upland varieties. In 1975, 68 percent was Delta Pine 16; 14 percent Stoneville; 12 percent Delta Pine Smooth Leaf; 5 percent Acala 1517; and 1 percent Mexico 910. Producers buy about 90 percent of their seed from seed firms, which certify the variety, check germination and moisture content.

## COTTON PROFITABILITY

The information available on costs and returns from producing cotton and alternative crops for each of the three major producing areas show that cotton was less profitable than some other crops in 1975.

**Laguna.** The most detailed information available was from Laguna where cotton is the major crop. Even though cotton is the major crop its profitability in terms of pesos per hectare fall behind each of the three alternative crops for which information was available. The net return for cotton in 1975 per hectare of reservoir irrigated land was 2,725 pesos (\$88 per acre), compared with 5,550 pesos (\$180 per acre) for dry beans, 3,300 (\$107 per acre) for corn, and 2,875 (\$93 per acre) for sorghum. On a per-pound basis, cotton returned 50 U.S. cents, while costs were 39 cents, leaving a net return of 11 cents to producers. (Tables 5 and 6)

However, cost of picking, which is a real expense for larger farmers who must hire labor, is an important part of the family income for smaller farmers who furnish their own labor for picking. Also, since the Government finances the picking, smaller farmers have this money before the crop is sold. Thus, the cost of picking—estimated at 1,250 pesos per hectare, which was deducted from gross

income as an expense item—may be added back to the net income for farmers who furnish their own picking labor. As a result, the net return increases from 2,725 pesos per hectare (\$88 per acre) to 3,975 pesos per hectare (\$127 per acre). Cotton then compares more favorably with the alternative crops and this should help in keeping Mexico's small farmers, especially the ejidatarios, in the cotton business for some time to come.

**Mexicali.** Detailed information on the cost of producing cotton in Mexicali was not readily available for 1975, but a rough calculation places the cost at about 12,000 pesos per hectare (\$389 per acre), slightly higher than in Laguna. With the same return of 12,080 pesos for lint and 2,500 for seed, this leaves a net profit of 2,580 pesos per hectare (\$84 per acre), well below that of wheat and safflower but above the net profits for barley. (Table 7) These estimates are confirmed by the heavy shift from cotton to wheat and safflower in 1975.

**Sonora.** Less detailed data were available for Southern Sonora, but available information indicates that cotton was more profitable on a per acre basis than corn, sorghum, or chickpeas. However, cotton

TABLE 6.—LAGUNA: COSTS AND RETURNS FOR COTTON AND SOME ALTERNATIVE CROPS, 1975

Crop	Yield	Price to producer	Total costs		Total returns		Net return	
			<i>Pesos per hectare</i>	<i>Dollars per acre</i>	<i>Pesos per hectare</i>	<i>Dollars per acre</i>	<i>Pesos per hectare</i>	<i>Dollars per acre</i>
Cotton <sup>1</sup> . . . . .	4 bales per hectare or 1.6 bales per acre	640 pesos per quintal or 50 U.S. cents per pound net weight	11,850	384	14,580	472	2,725	88
Dry beans <sup>2</sup> . . . . .	1.5 metric tons per hectare or 1,339 pounds per acre	5,500 pesos per metric ton, \$400 per m.t. or \$20 per cwt.	3,450	112	9,000	292	5,555	180
Corn <sup>3</sup> . . . . .	4 metric tons per hectare or 90 bu. per acre	1,750 pesos per metric ton, \$140 per m.t. or \$3.56 per bu.	3,700	120	7,000	227	3,300	107
Sorghum <sup>4</sup> . . . . .	4 metric tons per hectare or 90 bu. per acre	1,650 pesos per metric ton, \$132 per m.t. or \$3.35 per bu.	3,725	121	6,600	214	2,875	93

<sup>1</sup> Based on 45,000 hectares for Ejido farmers and 3,000 for private landowner farmers using reservoir water only.

<sup>2</sup> Based on 20,000 hectares for Ejido farmers and 7,000 for small landowner farmers using reservoir water only.

<sup>3</sup> Based on 300 hectares for Ejido farmers and 50 for small landowner farmers using reservoir water only.

<sup>4</sup> Based on 300 hectares for Ejido farmers and 150 for small landowner farmers using reservoir water only.

Source: Aseguradora Nacional Agrícola Y Ganadera, S.A., 1975.

TABLE 7.—MEXICALI: ESTIMATED COSTS AND RETURNS FOR 1975 CROPS OF BARLEY, WHEAT, AND SAFFLOWER<sup>1</sup>

Item	Barley <sup>2</sup>		Wheat <sup>3</sup>		Safflower <sup>4</sup>	
	<i>Pesos per hectare</i> 90	<i>Dollars<sup>5</sup> per acre</i> 2.91	<i>Pesos per hectare</i> 90	<i>Dollars<sup>5</sup> per acre</i> 2.91	<i>Pesos per hectare</i> 90	<i>Dollars<sup>5</sup> per acre</i> 2.91
Discing . . . . .						
Plowing . . . . .	290	9.39	290	9.39	290	9.39
Discing . . . . .	90	2.91	90	2.91	90	2.91
Floating . . . . .	90	2.91	90	2.91	90	2.92
Fertilizer, first application . . . . .	635	20.57	760	24.62	515	16.68
Clearing of canals . . . . .	75	2.43	75	2.43	75	2.43
Seed . . . . .	510	16.52	440	14.25	160	5.18
Planting . . . . .	135	4.37	135	4.37	90	2.91
Bordering . . . . .	90	2.91	90	2.92	180	5.83
Preplant irrigation <sup>1</sup> . . . . .	150	4.86	150	4.86	150	4.68
Four auxiliary irrigations <sup>1</sup> . . . . .	465	15.06	465	15.06	465	15.06
Herbicide and application . . . . .	—	—	—	—	365	11.82
Fertilizer, second application . . . . .	245	7.94	290	9.39	—	—
Three cultivations . . . . .	—	—	—	—	270	8.75
Insecticide and application . . . . .	140	4.54	140	4.54	225	7.29
Harvest . . . . .	300	9.72	300	9.72	350	11.34
Transport to market . . . . .	200	6.48	200	6.48	160	5.18
Total costs . . . . .	3,505	113.52	3,605	116.76	3,565	115.46
Gross return . . . . .	<sup>6</sup> 5,250	<sup>6</sup> 170.04	<sup>7</sup> 7,000	<sup>7</sup> 226.72	<sup>8</sup> 7,000	<sup>8</sup> 226.72
Net return . . . . .	1,745	56.52	3,395	109.96	3,435	111.25

<sup>1</sup> Based on a mixture of well water and Colorado River water irrigation. About 80 percent of irrigation in the Mexicali area is from the Colorado River.

<sup>2</sup> Based on 11,680 hectares for Ejidatario farmers and 8,300 hectares for small landowner farmers.

<sup>3</sup> Based on 17,800 hectares for Ejidatario farmers and 17,670 hectares for small landowners.

<sup>4</sup> Based on 6,180 hectares for Ejidatario farmers and 11,200 hectares for small landowners.

<sup>5</sup> Converted at 12.5 pesos per dollar.

<sup>6</sup> Based on a price of 1,400 pesos per metric ton (\$112 per metric ton or \$2.44 per bushel) and average yield of 3,750 kilograms per hectare (70 bushels per acre).

<sup>7</sup> Based on a price of 1,750 pesos per metric ton (\$140 per metric ton, or \$3.81 per bushel) and average yield of 4 metric tons per hectare (60 bushels per acre). Yields vary from about 3 to 7 metric tons per hectare.

<sup>8</sup> Based on price of 3,500 pesos per metric tons (\$280 per metric ton or \$0.127 per pound) and yield of 2 metric tons per hectare (1,785 pounds per acre).

Source: Aseguradora Nacional Agrícola Y Ganadera, S. A., (ANAGSA).

production was less profitable than wheat, soybeans, safflower, and flax. (Table 8)

Again these data are borne out by the fact that this area shifted very heavily from cotton to wheat,

soybeans, safflower, flax, and other crops in 1975. Table 9 shows a comparison of area devoted to major crops in Sonora in 1974 and 1975.

TABLE 8.—COMPARATIVE ANALYSIS OF RETURNS FROM PRINCIPAL CROPS IN SOUTHERN SONORA, MEXICO, 1974-75

Crop	Cubic meters of water per hectare	Yield per hectare	Price received per ton	Gross return per hectare	Cost per hectare	Profit per hectare	Profit per acre	Gross return per thousand cubic feet of water	Net profit per thousand cubic feet of water
		<i>Kilograms</i>	<i>Pesos</i>	<i>Pesos</i>	<i>Pesos</i>	<i>Pesos</i>	<i>Dollars</i> <sup>1</sup>	<i>Pesos</i>	<i>Pesos</i>
Cotton . . . . .	11.83	2,900	4,400	12,760	9,756	3,004	97	1,078.60	253.93
Wheat . . . . .	7.92	4,325	1,750	7,568	3,725	3,843	124	955.55	485.22
Soybeans . . . . .	12.20	2,331	3,500	8,159	3,853	4,306	139	668.75	352.95
Safflower . . . . .	5.73	1,975	3,500	6,913	2,630	4,283	139	1,206.45	747.45
Corn . . . . .	8.50	3,800	1,500	5,700	3,906	1,794	58	670.60	211.05
Sorghum . . . . .	11.00	4,563	1,600	7,300	4,653	2,647	86	663.65	240.65
Flax . . . . .	7.16	1,971	5,000	9,855	3,667	6,188	200	1,376.40	864.25
Chic peas . . . . .	5.80	1,600	4,100	6,560	4,214	2,346	76	1,131.05	404.50

<sup>1</sup> Based on a conversion rate of 12.50 per dollar.

Source: Asociacion de Organismos de Agricultores, del Sur de Sonora, A. C., Sección de Informacion y Estadística.

TABLE 9.—SONORA: CHANGES IN AREA IN MAJOR CROPS FROM 1974 TO 1975

[In thousands of hectares]

Crop	1974	1975	Percent change
Wheat . . . . .	274	290	+6
Soybeans . . . . .	89	105	+18
Safflower . . . . .	44	101	+130
Cotton . . . . .	134	43	-68
Sorghum . . . . .	12	25	+108
Sesame . . . . .	18	23	+28
Alfalfa . . . . .	14	20	+43
Flax . . . . .	2	12	+500
Other . . . . .	81	67	-17
Total . . . . .	668	686	+3

## MARKETING

Mexican cotton farmers are free to plant as much cotton as they wish, but when they sell their crop, they generally must take their chances on the price. The Government does not give a guaranteed price. About two-thirds of the crop normally goes into the export market and the world price usually determines what the producer will receive. Exceptions were made in 1973 when world prices were rising and again in 1974 when prices dropped sharply.

In 1973 many farmers had contracted their crop at prices ranging from 375 to 550 pesos per quintal (29 to 43 U.S. cents per pound). As prices rose considerably above the contracted prices, producers began to deliver bales that were lighter than required by contracts. At this point the Government took two steps: Buyers were required to accept bales weighing less than the standard 230-kilogram gross weight, plus or minus 10 percent specified in the contracts; and buyers were required to pay and producers to accept 800 pesos per quintal (63 U.S. cents per pound) for cotton that had not been contracted for.

In 1974 when world prices dropped, the Government acting through its own cotton company, Algodonera Comercial Mexicana, purchased nearly 1 million bales or 45 percent of the crop for an average price of about 40 U.S. cents per pound (500 pesos per quintal). This cotton was sold later for prices ranging from 35 U.S. cents (450 pesos per quintal) to 47 U.S. cents (600 pesos per quintal). About half went to domestic use and the balance into export. Prices continued to recover into 1975 and the crop harvested that year was so much smaller that domestic rather than export demand began to be the major factor influencing prices. Prices at harvest time were about 3 U.S. cents per pound above the level that would have made Mexican cotton competitive in world markets.

Mexican cotton producers, either individually or cooperatively, generally sell their cotton to one of about a dozen major cotton dealers who either export the cotton or sell it to domestic mills. On the West Coast, most producers sell unginned cotton, but in other areas most cotton is ginned on a custom basis. Lint is sold to dealers while the seed is sold separately, either to privately owned oil mills or to the Government food buying, processing, and marketing agency, CONASUPO (Compania Nacional de Subsistencias Populares). Government classing is available for a fee of about 50 U.S. cents per bale and many farmers take advantage of this service. Dealers also do their own classing.

Ginning is done by dealers or by ejidatario farmers or small landowner farmers who cooperatively own gins. Average ginning charges for the 1974/75 crop

were 6.2 cents per pound in the West Coast State of Sonora, 6.4 cents in Laguna, and 7.8 cents in Mexicali.

Lint is packed in bales that weigh an average of about 218 kilograms net, or 480 pounds, the same as in the United States. Packaging generally is quite light because cotton bagging and wire bands are popular, but jute bagging and heavier bands also are used. Packaging weights vary from about 5 to 18 pounds.

About 80 percent of Mexico's cotton is 1-1/16", 15 percent staples 1-3/32" and 5 percent staples 1-1/32" or less. Ejidatario farmers generally pick very clean cotton, but migrant pickers hired by small landowner farmers are reportedly less willing than they were a few years ago to spend the time to do a good job picking. Consequently, cotton picked by migrants contains more and more trash and requires more and more cleaning.

The Government supported the price of cottonseed in 1974 at 2,200 pesos (\$176) per metric ton or 8 U.S. cents per pound. Normally, however, there is no support, and during the 1975 season the demand for seed was so strong because of a short crop that the market price for cottonseed was running from 2,200 (\$176) to 2,700 pesos (\$216) per metric ton (8 to 10 U.S. cents per pound).

The United States has not supported the price for cottonseed in a number of years. The average price to the U.S. farmer during 1975 was 4.9 cents per pound.

Cotton producers are not under as much pressure to sell their crop at harvesttime as they would be if they did not receive financing throughout the year. However, they do have to pay interest until the loans are repaid, but the rate of about 12 percent per year is low, considering that the inflation rate was about 24 percent in 1974 and 15 percent in 1975. Thus, in real terms, the interest rate was negative.

Storage costs are relatively low because cotton may be stored outside in major producing areas. Storage at Torreon, for example, is 16 U.S. cents per bale per month or \$1.92 per year. Some producer associations and credit unions are well financed and are in a good position to hold cotton until they feel the time is appropriate to sell. These associations and credit unions finance and market the crops for members. Also they sometimes perform other services provided by cooperatives in the United States.

The Government cotton company, Algodonera Comercial Mexicana (ACM), bought about 1 million bales or 45 percent of the crop in 1974, but normally ACM's policy is to buy only about 25 percent of the crop. ACM and other dealers generally buy only when they have a market for the cotton. During the 1975 harvest period, domestic mills constituted most of the

market. Dealers were paying about 50 cents per pound of lint (net weight) to producers. Freight, taxes, and other costs of getting the cotton from the gin to the mill or to the port ran about 3 cents per pound.

Ocean freight from Mexico to Japan or to Western Europe ran about 5 cents per pound bringing the c.i.f.

value of Mexican cotton to 58 U.S. cents. This was about 3 cents per pound above Middle Eastern and other competitive offers in the fall of 1975. However, since that time the world price has risen substantially and Mexico is expected to export at least 600,000 bales during the 1975/76 marketing year.

## CONSUMPTION

Mexican cotton consumption has remained relatively stable at about 700,000 to 800,000 bales since the mid-1960's as a result of increasing textile exports that offset declining domestic use. (Table 1) Exports of cotton textiles in 1968 were 6,991 metric tons or the equivalent of 35,000 bales of raw cotton. This was equal to 5 percent of total domestic cotton textile production. By 1974 exports had reached 39,468 metric tons or 200,000 bales raw cotton equivalent, which was equal to 28 percent of total production. (Tables 10 and 11).

Textile exports to the United States were down in the second half of 1974 and early 1975, but by the end of 1975, they had nearly recovered to earlier levels.

Cotton cloth accounted for 62 percent of the value of Mexico's cotton product exports in 1973 and cotton yarn for most of the balance. The United States was the most important market for both of these products, accounting for 44 percent of the value of cloth and 29 percent of the value of yarn

exports. Other important markets were Japan, Switzerland, Canada, Belgium, and Spain.

The future for Mexico's textile exports to the United States appears good. The United States and Mexico signed on May 12, 1975 a bilateral agreement on trade in cotton, wool, and manmade fiber textiles, which replaced the June 21, 1971, agreement on cotton textiles only. The new agreement, covering the 3-year period, May 1, 1975, to May 1, 1978, provides for a 7 percent annual growth rate in Mexico's exports of these products to the United States.

At the same time, apparent domestic consumption of cotton textiles declined from 149,191 metric tons in 1968, or 70 percent of total domestic fiber consumption, to 101,988 metric tons in 1974, or 38 percent of total domestic fiber consumption. (See accompanying chart and table 11.) Noncellulosic manmade fiber consumption accounted for an estimated 47 percent of domestic fiber consumption in 1974 and cellulosic fiber consumption accounted for 12 percent.

TABLE 10.—MEXICO: COTTON TEXTILE PRODUCTION, EXPORTS, AND APPARENT DOMESTIC CONSUMPTION IN METRIC TONS AND IN BALES OF RAW COTTON EQUIVALENT, 1968 TO 1974

Year	Production		Exports		Apparent domestic consumption	
	<i>Metric tons</i>	<i>Bales<sup>1</sup></i>	<i>Metric tons</i>	<i>Bales<sup>1</sup></i>	<i>Metric tons</i>	<i>Bales<sup>1</sup></i>
1968 .....	153,810	777,077	6,991	35,320	149,191	753,741
1969 .....	164,610	831,641	9,825	49,638	158,027	798,382
1970 .....	154,890	782,534	9,248	46,723	148,846	751,998
1971 .....	151,830	767,074	12,430	62,799	142,252	718,684
1972 .....	155,070	783,443	19,463	98,331	138,111	697,763
1973 .....	157,410	795,265	38,686	195,449	120,752	610,062
1974 .....	139,756	706,074	39,468	199,400	101,988	515,263

<sup>1</sup> In bales of raw cotton equivalent. Based on a conversion factor of yarn and textiles to raw cotton equivalent of 1.10.

Source: Memoria Estadística 1975, Camara Nacional de la Industria Textil.

TABLE 11.—MEXICO: APPAREL FIBER TEXTILE PRODUCTION, TRADE, AND CONSUMPTION, 1968-74

Item	1968	1969	1970	1971	1972	1973 <sup>1</sup>	1974 <sup>1</sup>
<b>Production:</b>	<i>In metric tons</i>						
Cotton .....	153,810	164,610	154,890	151,830	155,070	157,410	139,756
Wool .....	12,736	12,054	8,417	8,782	7,524	3,869	3,325
Cellulosic .....	24,742	26,914	27,709	25,836	22,644	21,185	21,290
Non-cellulosic .....	20,844	28,478	40,000	56,042	76,647	106,541	125,077
Total .....	212,132	232,056	231,016	242,490	261,885	289,005	289,448
<b>Imports:</b>							
Cotton .....	2,372	3,242	3,204	2,852	2,504	2,028	1,700
Wool .....	445	554	495	430	445	277	250
Cellulosic .....	1,754	2,943	4,726	5,645	7,954	10,948	15,280
Non-cellulosic .....	113	169	247	579	961	783	1,328
Other .....	3,060	4,197	4,976	4,295	4,907	5,548	4,500
Total .....	7,744	11,105	13,648	13,801	16,771	19,584	23,058
<b>Exports:</b>							
Cotton .....	6,991	9,825	9,248	12,430	19,463	38,686	39,468
Wool .....	363	262	197	240	289	528	192
Cellulosic .....	589	1,457	1,831	2,146	3,838	7,141	5,760
Non-cellulosic .....	0	0	0	0	0	0	0
Total .....	7,943	11,544	11,276	14,816	23,590	46,355	45,420
<b>Apparent consumption:</b>							
Cotton .....	149,191	158,027	148,846	142,252	138,111	120,752	101,988
Wool .....	12,818	12,346	8,715	8,972	7,680	3,618	3,383
Cellulosic .....	25,907	28,400	30,604	29,335	26,760	24,992	30,810
Non-cellulosic .....	20,957	28,647	40,247	56,621	77,608	107,324	126,405
Other .....	3,060	4,197	4,976	4,295	4,907	5,548	4,500
Total .....	211,933	231,617	233,388	241,475	255,066	262,234	267,086
<b>Population .....</b>	45,955	47,408	48,856	50,430	52,064	53,763	55,590
<b>Per capita consumption:</b>	<i>In kilograms per person</i>						
Cotton .....	3.246	3.333	3.047	2.820	2.653	2.246	1.835
Wool .....	0.279	0.261	0.178	0.178	0.147	0.067	0.061
Cellulosic .....	0.564	0.599	0.626	0.582	0.514	0.465	0.554
Non-cellulosic .....	0.456	0.604	0.824	1.123	1.491	1.997	2.274
Other .....	0.067	0.089	0.102	0.085	0.094	0.103	0.081
Total .....	4.612	4.886	4.777	4.788	4.899	4.878	4.805
<b>Percent</b>							
Cotton .....	70.4	68.2	63.8	58.9	54.2	46.1	38.2
Wool .....	6.1	5.3	3.7	3.7	3.0	1.4	1.3
Cellulosic .....	12.2	12.3	13.1	12.1	10.5	9.5	11.5
Non-cellulosic .....	9.8	12.4	17.3	23.5	30.4	40.9	47.3
Other .....	1.5	1.8	2.1	1.8	1.9	2.1	1.7
Total .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Estimated.

Source: Memoria Estadística 1975, Cámara Nacional de la Industria Textil.



Manmade fibers have gained a large share of the textile market in Mexico, despite their high cost in relation to cotton. Polyester staple was selling in Mexico in mid-1975 for \$2.10 per kilogram or 95 U.S. cents per pound, nearly double the price of cotton and almost double the U.S. price for polyester staple. This gain in utilization of manmade fiber despite its high price is

attributed to its "easy care" characteristics and to the fact that the cost of the fiber makes up a relatively small part of the total cost of the garment. As a result of the high price, however, Mexico exports very little manmade fiber textiles either in pure or blended form.

TABLE 12.—MEXICAN TEXTILE INDUSTRY, NUMBER OF SPINDLES AND NUMBER OF LOOMS, 1968-1974

Year	Number of spindles	Number of looms
1968 .....	2,765,850	69,272
1969 .....	2,865,868	71,488
1970 .....	2,929,010	73,458
1971 .....	3,000,602	74,411
1972 .....	3,024,622	74,616
1973 <sup>1</sup> .....	3,082,230	75,297
1974 <sup>2</sup> .....	3,157,022	75,360

<sup>1</sup> Preliminary.

<sup>2</sup> Estimated.

Source: Memoria Estadística, Cámara Nacional de la Industria Textil, 1975.

## GOVERNMENT POLICIES

The Government can influence what farmers plant through minimum prices, allocation of irrigation water, allocation of credit, and crop insurance.

### Minimum Prices

The Government traditionally has not provided a support price for cotton. With some modifications, the price is determined by world supply and demand. A major modification is that imports of cotton stapling 29 millimeter (mm) or less (29 mm is slightly over 1-1/8") from any most-favored-nation source are effectively kept out by a tariff of 20 percent ad valorem. Lint over 29 mm from most-favored-nation origins also is subject to the 20 percent duty. But lint over 29 mm from the Latin American Free Trade Association (LAFTA) is duty free.

This new duty structure went into effect in January 1976, replacing a duty of 2.4 U.S. cents per kilogram plus 35 percent ad valorem for lint 29 mm or less, no duty for lint over 29 mm from LAFTA, and 7 percent for lint over 29 mm from other origins. As Mexico in the past has been a substantial exporter of cotton, only small imports of mostly extra-long staple cotton were made from Egypt, Peru, and the United States.

Another modification occurred in 1973 when world cotton prices rose dramatically. From August 22, 1973, to June 30, 1974, the Government required that export sales be registered and export licenses be granted in order to assure adequate supplies for domestic mills. Then when world prices dropped in 1974, the Government moved into the domestic market and bought about 1 million bales at prices

TABLE 13.—MEXICO: PRICE OF FERTILIZER PER METRIC TON, IN POLYETHYLENE SACKS, LOADED ON RAILWAY CARS, AT DESTINATION<sup>1</sup>

Type	Prior to December 19, 1973		December 19, 1973 to May 5, 1975		After May 5, 1975	
	<i>Pesos</i>	<i>Dollar equivalent</i>	<i>Pesos</i>	<i>Dollar equivalent</i>	<i>Pesos</i>	<i>Dollar equivalent</i>
Sulfate of ammonia . . . . .	635	50.80	768	61.44	900	72.00
Potassium chloride . . . . .	835	66.80	931	74.48	1,170	93.60
Potassium sulfate . . . . .	1,070	85.60	1,343	107.44	1,680	134.40
Anhydrous ammonia . . . . .	900	72.00	1,580	126.40	1,980	158.40
Nitrate of ammonia . . . . .	1,125	90.00	1,354	108.32	1,500	120.00
Triple superphosphate . . . . .	1,255	100.40	1,712	136.96	2,140	171.20
Urea . . . . .	1,255	100.40	1,510	120.80	1,820	145.60
Diamonium phosphate 18-46-0 . . . . .	1,675	134.00	2,004	160.32	2,700	216.00
Blended						
25-25-0 . . . . .	1,655	132.40	1,952	156.16	2,340	187.20
17-17-17 . . . . .	1,500	120.00	1,656	132.48	1,931	154.48
16-20-0 . . . . .	1,240	99.20	1,389	111.12	1,700	136.00

<sup>1</sup> These are prices paid by producers' associations and charged to farmers at railroad points. (Does not include local delivery by mule or other conveyance.) Dollar equivalent is based on an exchange rate of 12.5 pesos per dollar.

<sup>2</sup> A 4 percent sales tax must be added to the prices after May 5, 1975. This tax was not paid on fertilizer prior to May 5, 1975.

Source: Asociación de Agricultores del Valle del Yaqui, A. C., Ciudad Obrigon, Sonora.

slightly above the market price. The market price soon moved up so that the Government lost little from this operation. Minimum prices for many other commodities are set at quite high levels. (Table 2)

Cottonseed also has not been supported traditionally. But in 1974, the Government provided a minimum price of 2,200 pesos, or \$176, per metric ton. The Government did not provide a minimum price in 1975, but market prices during harvesttime were generally well above the old support level.

## Irrigation

The Government provides irrigation water from reservoirs at what are, in effect, subsidized rates. For example, the 1975 cost of irrigating cotton at Tlaxiaco was \$10 per acre for reservoir water and about \$65 per acre for privately owned well water. The cost for reservoir water will increase to \$15 per acre in 1976, still less than the cost for well water, which will probably also go up. While in general Government policy is to allow farmers to decide what they will produce with the reservoir supply, water is a

scarce item in Mexico and the Government can use it as a very powerful tool influencing crop production. This is especially true for ejidatario farmers who receive most of the reservoir water. Also if reservoirs are low, double cropping may be restricted. Table 4 shows the distribution of well and reservoir water by type of farmer in Laguna in 1974.

## Credit

The availability of credit from the Government at subsidized rates of interest also can be used effectively to guide farmers in producing crops considered socially desirable. Although in nominal terms Government interest rates may appear to be high, they are actually subsidized rates. The Government's interest rate on crop production loans is less than the commercial rate, which is generally higher than the inflation rate. The inflation rate has ranged from 12 to 24 percent annually during the past 3 years.

Interest rates charged farmers by the Government may not only be subsidized, they may even be negative in real terms which means they are less than the rate of inflation. For example, if the nominal interest rate is 10 percent, but inflation has reduced

TABLE 14.—MEXICO: C.I.F. OFFERING PRICES PER POUND OF COTTON<sup>1</sup>

Year <sup>2</sup> and month	Northern Europe		Bremen	
	United States <sup>3</sup>	Mexico	United States	Mexico
1968 .....	33.07	30.89	32.10	30.52
1969 .....	28.47	28.45	28.47	27.80
1970 .....	29.68	30.71	29.54	30.20
1971 .....	34.21	35.46	33.66	18.93
1972 .....	36.55	37.52	36.25	37.04
1973 .....	64.91	52.51	58.68	55.04
1974				
January .....	93.50	90.20	93.50	87.20
February .....	82.12	83.62	82.12	NQ
March .....	74.38	76.88	75.18	74.00
April .....	69.94	73.00	75.73	73.17
May .....	63.65	66.60	70.00	65.50
June .....	62.69	63.38	66.75	63.12
July .....	65.38	60.00	64.62	59.62
August .....	64.26	60.55	63.30	60.90
September .....	60.46	59.75	60.25	59.25
October .....	57.97	57.25	57.55	56.87
November .....	53.65	53.25	52.19	50.12
December .....	52.27	49.50	49.81	47.65
1975				
January .....	51.24	47.80	49.69	48.00
February .....	52.58	48.00	50.88	47.94
March .....	53.76	49.44	52.88	48.94
April .....	56.25	52.69	54.32	51.75
May .....	NQ	55.45	56.10	55.40
June .....	61.00	56.88	55.50	55.81
July .....	60.78	58.40	57.65	56.90
August .....	63.14	59.56	61.43	60.70
September .....	65.39	60.19	63.38	61.15
October .....	64.75	59.70	63.82	60.50
November .....	65.66	58.96	63.88	59.00
December .....	68.56	61.06	66.75	60.61
1976				
January .....	71.44	66.88	70.06	67.00
February .....	71.44	68.81	69.38	67.75
March .....	70.25	70.00	68.62	68.00
April .....	70.26	NQ	68.05	69.44

<sup>1</sup> Specified growths of SM 1-1/16 inches, in Northern Europe and Bremen, generally for prompt shipment, annual 1968-73, monthly 1974-75.

<sup>2</sup> Beginning January 1.

<sup>3</sup> Memphis territory.

NQ—Not quoted

Source: Cotton Outlook, Liverpool England; and Bremen Cotton Exchange.

the purchasing power of money in terms of real goods and services by 15 percent, the farmer is paying back less than he borrowed (again in real terms).

## Insurance

Crop insurance is provided by the Government and could be used to influence what farmers produce. However, since practically all crops grown in the same area as cotton are produced under irrigation, the risks are not as great as in areas where crops are grown with rainfall. Thus, crop insurance would not be a very effective lever for influencing farmers' decisions on selection of crops to plant.

The Government has two policy considerations that are not easy to reconcile in dealing with cotton: The Government wants to provide employment for agricultural workers and cotton, which is labor intensive, serves this function and also provides foreign exchange earnings; the Government also must provide a plentiful supply of grains which since they are mostly harvested mechanically do not provide as much employment as cotton (with the exception of corn, which is not very competitive in cotton-growing areas).

Probably the overriding consideration will be providing food for the growing population. However, this need might be met by exporting cotton and using the foreign exchange earnings to import food, if the Government should decide that its comparative advantage lies in cotton.

Some of the urgency of making such a decision will be removed, however, if Mexican petroleum reserves are found to permit large-scale petroleum exports. Mexico became self-sufficient in petroleum in 1974 and began exporting substantial quantities in 1975. Net exports in 1976 are projected at \$525 million, compared with an estimated \$325 million in 1975. However, the size of Mexican petroleum reserves, and consequently, the long-range outlook for petroleum exports remain unknown.

TABLE 15.-MEXICO: DIRECT EXPORTS OF COTTON BY COUNTRY OF DESTINATION, AVERAGE 1965/69,  
ANNUAL 1970/74

(1,000 bales of 480 pounds net)

Country of destination	Year beginning August 1					
	Average 1965-69	1970	1971	1972	1973	1974 <sup>1</sup>
Australia . . . . .	1	0	0	0	4	0
Belgium . . . . .	14	1	(2)	2	5	1
Canada . . . . .	14	1	1	4	4	5
Chile . . . . .	55	72	104	81	24	15
China, People's Republic of . . . . .	0	0	73	111	111	5
China, Republic of . . . . .	29	16	36	23	0	0
Cuba . . . . .	0	0	0	0	0	0
France . . . . .	65	16	9	7	17	4
Germany, West . . . . .	62	18	10	4	6	8
Hong Kong . . . . .	15	3	9	5	6	(2)
Israel . . . . .	1	0	0	0	0	0
Italy . . . . .	163	43	22	42	38	33
Japan . . . . .	626	439	440	395	364	238
Netherlands . . . . .	8	1	2	6	4	3
Panama, Republic of <sup>3</sup> . . . . .	15	0	1	3	11	0
Philippines . . . . .	23	(2)	0	(2)	1	1
Portugal . . . . .	2	(2)	(2)	2	1	1
Spain . . . . .	7	43	8	(2)	11	3
Switzerland . . . . .	17	14	6	11	5	16
Thailand . . . . .	10	5	8	12	6	2
United Kingdom . . . . .	9	1	1	3	(2)	(2)
United States <sup>3</sup> . . . . .	363	76	157	112	108	151
Uruguay . . . . .	4	(2)	(2)	0	(2)	(2)
Yugoslavia . . . . .	0	6	14	21	(2)	1
Other countries . . . . .	20	5	8	19	15	10
Total . . . . .	1,523	760	909	863	741	497

<sup>1</sup> August-December. Estimate for August-July is 890.

<sup>2</sup> Less than 500 bales.

<sup>3</sup> Partly for transshipment.

Source: *Anuario Estadístico del Comercio Exterior de los Estados Unidos Mexicanos, Revista de Estadística*, U.S. agricultural attachés, and other representatives abroad.

Mexico: Apparel fiber consumption by type, calendar 1968-74



